



# INFLUENCE OF ISOLATED AND COMBINED CIRCUIT AND FARTLEK TRAININGS ON SELECTED ENDURANCE PARAMETERS AMONG COLLEGE MEN STUDENTS

\* M. Sankar<sup>1</sup> | Dr. S. Suthakar<sup>2</sup>

<sup>1</sup> Ph.D., Research Scholar, Dept. of Physical Education, Karpagam University, Coimbatore.

<sup>2</sup> Head, Dept. of Physical Education, Karpagam University, Coimbatore.

## ABSTRACT

The purpose of the study was to find out the influence of isolated and combined circuit and fartlek trainings on selected endurance parameters among college men students. To achieve the purpose of the study, 45 college men were selected studying Bachelor of Law in the Central Law College, Salem, Tamil Nadu, India. The age of the subjects ranged between 19 and 25 years. The selected subjects were divided into three experimental groups namely circuit training group, fartlek training group and combined training (circuit and fartlek training) group with fifteen subjects in (n=15) each. The duration of the training period will be restricted to twelve weeks and the number of sessions per week is confined to three. This initial test scores formed as pre test scores of the subjects. After the experimentation, all the forty five subjects were tested on their endurance parameters. This final test scores formed as post test scores of the subjects. The pre test and post test scores were subjected to statistical analysis using dependant 't' test and Analysis of Covariance (ANCOVA) to find out the significance among the mean differences, whenever the 'F' ratio for adjusted test was found to be significant, Scheffe's post hoc test was used. In all cases 0.05 level of significance was fixed to test hypotheses. The result reveals that there was a significant improvement in the experimental groups on selected endurance parameters when compared among the experimental groups. The combined circuit and fartlek training group has showed the better improvement in speed endurance and muscular endurance as well as the fartlek training group in the cardio respiratory endurance than the other training groups.

**KEY WORDS:** Circuit Training, Fartlek Training, Endurance Parameters.

## Introduction

Bucher and Charles (1978) note that "training is a systematic process of repetitive, progressive exercise or work involving learning process and acclimatization"

The circuit training was modernized by R.E. Morgan and G.T. Anderson at the University of Leeds in England in 1953. The circuit exercises arrangement was 9 to 12 exercises at a moderate intensity with a particular number of repetitions as well as specified time. Enhancements in strength endurance were witnessed by means of the training patterns (Kravitz, 1996).

Fartlek training or speed play is one of the most widely used trainings among the different types of training. The training enhances the aerobic and anaerobic developments of the athletes (Hvilvilzky, 1999).

One of the most important things behind the success of anything is training as well as physical fitness. The systematic training and body fitness level base upon the different types of sports and games. The highest level of the success in the world of competitive sports is entirely based on the appropriate designed training. Even though, a variety of training methods are behind the successful competitive sports, circuit and fartlek training methods has its unique training schedules which has been utilized worldwide according to the training needs of the sports.

## Methodology

The purpose of the study was find out the influence of isolated and combined circuit and fartlek trainings on selected endurance parameters among the college men students. To achieve the purpose of the study, 45 college men were selected studying Bachelor of Law in the Central Law College, Salem, Tamil Nadu, India. The age of the subjects ranged between 19 and 25 years. The selected subjects were divided into three experimental groups namely circuit training group, fartlek training group and combined circuit and fartlek training group with fifteen subjects in (n=15) each. The duration of the training period will be restricted to twelve weeks and the number of sessions per week is confined to three. This initial test scores formed as pre test scores of the subjects. After the experimental treatment, all the forty five subjects were tested on their endurance parameters. This final test scores formed as post test scores of the subjects. The pre test and post test scores were subjected to statistical analysis using dependant 't' test and Analysis of Covariance (ANCOVA) to find out the significance among the mean differences, whenever the 'F' ratio for adjusted test was found to be significant, Scheffe's post hoc test was used. In all cases 0.05 level of significance was fixed to test hypotheses. The investigator selected the following variables for the present investigation.

**Table - I**

S. No	Variables	Test Items	Units
1	Speed Endurance	150 Meters Run	1/10 Seconds
2	Muscular Endurance	Bend Knee Sit Ups	In Numbers
3	Cardio Respiratory Endurance	Cooper's 12 Minutes Run / Walk	In Meters

## Results and Discussion

The detailed procedure of analysis of data and interpretation were given below,

**Table-II**

**Significance of Mean Gains and Losses between Pre and Post Test Scores on Selected Endurance parameters of Circuit Training, Fartlek Training and Combined Circuit and Fartlek Training Groups**

S. No.	Variables	t- values		
		Circuit Training	Fartlek Training	Combined Circuit and Fartlek Training
1	Speed Endurance (1/10 Seconds)	6.53*	6.28*	7.51*
2	Muscular Endurance (In Numbers)	19.81*	14.95*	21.12*
3	Cardio Respiratory Endurance (In Meters)	7.32*	13.21*	6.95*

The table II shows that the t - values of three groups on selected endurance parameters among the college men.

**Table - III**

**Analysis of Co-variance of Circuit Fartlek and Combined Training Groups on Selected Endurance parameters among College Men**

Sl. No	Variables	Source of Variance	Sum of Squares	df	Mean Squares	F-Value
<b>Pre Test</b>						
1	Speed Endurance	BG	0.13	2	0.07	0.16
		WG	17.07	42	0.41	
2	Muscular Endurance	BG	0.13	2	0.07	0.06
		WG	44.67	42	1.06	
3	Cardio Respiratory Endurance	BG	13934	2	6967	0.16
		WG	1879473	42	44749	

Post Test						
1	Speed Endurance	BG	2.95	2	1.47	14.39*
		WG	4.30	42	0.10	
2	Muscular Endurance	BG	104.58	2	52.29	32.04*
		WG	68.53	42	1.63	
3	Cardio Respiratory Endurance	BG	153954	2	76977	2.12
		WG	1523560	42	36275	
Adjusted Post Test						
1	Speed Endurance	BG	2.93	2	1.46	13.96*
		WG	4.30	41	0.10	
2	Muscular Endurance	BG	101.90	2	50.95	44.08*
		WG	47.39	41	1.16	
3	Cardio Respiratory Endurance	BG	140904	2	70452	20.61*
		WG	140159	41	3418	

\* $P < 0.05$  Table F,  $df(2,42)$  (0.05) = 3.21

In table III, the results of analysis of variance of pre test scores on speed endurance (0.16) muscular endurance (0.06) and cardio respiratory endurance (0.16) were lesser than the table value of 3.21 indicating that it was not significant for the degrees of freedom (2,42) at 0.05 level of confidence indicating that the random sampling was successful. The results of analysis of variance of post test scores on speed endurance (14.39) and muscular endurance (32.04) were greater than the table value of 3.21 indicating that it was significant for the degrees of freedom (2,42) at 0.05 level of confidence but cardio respiratory endurance (2.12) was lesser than table value of 3.21 and insignificant. The results of analysis of covariance of adjusted post test scores on speed endurance (13.96) muscular endurance (44.08) and cardio respiratory endurance (20.61) were greater than the table value of 3.22 indicating that it was significant for the degrees of freedom (2,41) at 0.05 level of confidence.

**Table-IV**  
Scheffe's Post-Hoc Test of Circuit Fartlek and Combined Training Groups for the Selected Endurance Parameters among College Men

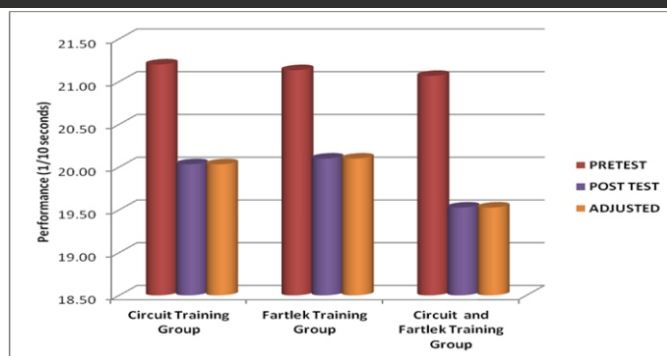
Sl. No	Variables	Means			Mean Difference	CI
		CIRCUIT	FARTLEK	COMBINED		
1	Speed Endurance	20.03	20.10	----	0.07	0.30
		20.03	-----	19.53	0.51*	
		-----	20.10	19.53	0.57*	
2	Muscular Endurance	30.45	28.60	---	1.85*	1.00
		30.45	---	32.29	1.84*	
		---	28.60	32.29	3.69*	
3	Cardio Respiratory Endurance	2374	2508	---	134.34*	54.26
		2374	---	2417	43.60	
		---	2508	2417	90.74*	

From the table IV it can be seen that the mean differences between circuit training group and combined training group; fartlek training group and combined training group of speed endurance (0.51, 0.98 respectively) greater than the confidential interval value 0.30, which was significant at 0.05 level of confidence.

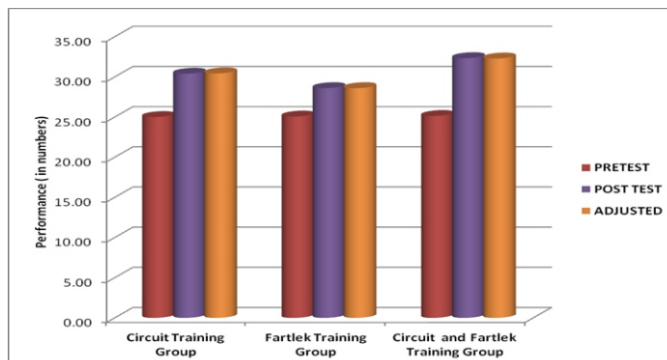
The mean differences between circuit training group and fartlek training group, circuit training group and combined training group; fartlek training group and combined training group of muscular endurance (1.85, 1.84 & 3.69 respectively) greater than the confidential interval value 1.00, which was significant at 0.05 level of confidence.

The mean differences between circuit training group and fartlek training group; fartlek training group and combined training group of cardio respiratory endurance (134.34, 90.74 respectively) greater than the confidential interval value 54.26, which was significant at 0.05 level of confidence.

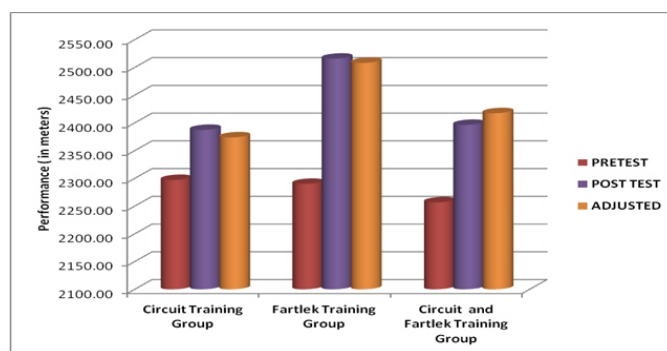
The mean differences between circuit training group and fartlek training group of speed endurance (0.07) and circuit training group and combined training group of cardio respiratory endurance (43.60) were lesser than the confidential interval values 0.30 and 53.26 respectively and the values are insignificant at 0.05 level of confidence.



**Figure-I Shows the Mean Values of Experimental Groups on Speed Endurance Among College Men**



**Figure-II Shows the Mean Values of Experimental Groups on Muscular Endurance Among College Men**



**Figure-III Shows the Mean Values of Experimental Groups on Cardio Respiratory Endurance Among College Men**

## CONCLUSIONS

In the light of the study undertaken with certain limitations imposed by the treatment conditions, the following conclusions were drawn.

- The result of the study reveals that there was a significant improvement in the experimental groups on selected endurance parameters when compared among the experimental groups after the completion of twelve weeks of circuit, fartlek and combined training groups.
- The combined circuit and fartlek training group is the most effective to develop the speed endurance and muscular endurance than the other training groups.
- The fartlek training group is most effective to develop the cardio respiratory endurance than the other training groups.

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